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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/758,948	01/11/2001	Danan Dou	DP-300744	9639
7590 02/05/2004			EXAMINER	
Vincent A. Cichosz DELPHI TECHNOLOGIES, INC. 1450 West Long Lake Troy, MI 48007			LISH, PETER J	
			ART UNIT	PAPER NUMBER
			1754	
DATE MAILED: 02/05/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/758,948

Applicant(s)

DOU ET AL.

Examiner

Peter J Lish

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11, 13-16 and 39-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11, 13-16, and 39-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 11/5/03
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 102

Claims 1-6, 15, and 39-41 are rejected under 35 U.S.C. 102(e) as being anticipated by Yamada et al. (US 6,221,804).

Yamada teaches an exhaust gas catalyst comprising an inner catalyst layer and an outer catalyst layer on a substrate, such as a honeycomb support made of cordierite. The porous support material for these catalyst layers may comprise aluminum oxide, ceria (cerium oxide), or at least one of the oxides of manganese, cobalt, titanium, and iron. The use of zirconia (zirconium oxide) is additionally taught in the examples. The support of the first catalyst layer is impregnated with noble metal, such as platinum. The support of the second catalyst layer is impregnated with noble metal, such as rhodium. Both supports are impregnated with a NO_x adsorbent, such as at least one of the metals selected from the group including alkali metals, such as sodium, and alkaline earth metals. No difference is seen between the catalyst material of Yamada et al. and that of the instantly claimed invention.

Claims 1-6, 15, and 39-41 are rejected under 35 U.S.C. 102(e) as being anticipated by Hanaki et al. (US 6,514,905).

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Hanaki teaches an exhaust gas catalyst comprising a monolithic carrier, or substrate, coated with a first coating layer and a second coating layer. The monolithic carrier is preferably formed of cordierite. The first coating layer is coated on the monolithic support and comprises refractory inorganic carrier and at least one of platinum or palladium. The second coating layer is coated on the first layer and comprises refractory inorganic carrier and both platinum and palladium. At least one of the first and second layers are impregnated with a NO_x trapping substance selected from the alkali metals, e.g. potassium, sodium, and cesium. The catalyst and NO_x trapping substances are carried on porous material such as alumina, although a mixture of alumina and titanium oxide is taught in example 11. The catalytic layers, or coatings, may additionally contain ceria (cerium oxide) or zirconia (zirconium oxide). No difference is seen between the catalyst material of Hanaki et al. and that of the instantly claimed invention.

Claims 1-7, 15, and 39-41 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 09-057099.

JP '099 teaches a substrate having a first alkali metal coating thereon. A porous material supports a noble metal and an alkali metal over the alkali coating. This porous material may be any of alumina, silica, titania, and a zeolite. A higher concentration of alkali metal is present in the first alkali coating, preventing diffusion of the alkali metal from the second coating toward the substrate. In example 1 of this reference, cordierite as a substrate is coated with potassium nitrate solution and dried, forming a first support layer. Then, silica and alumina slurry was used to coat a porous support of silica and alumina onto the first support layer. Then, this porous support was impregnated with platinum and potassium. It is taught in paragraph [0011] that the

(a NO_x oxidation catalyst)

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first support layer may consist of a ceramic with alkali metal, such as the same porous support of the second layer. No difference is seen between the teaching of JP '099 and that of the instantly claimed invention.

Claim 7 and 14 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Yamada et al. (US 6,221,804) as applied above.

Yamada et al. does not specifically teach that the first layer, or "alkali barrier layer", is sufficient to substantially inhibit the migration of alkali material out of the adsorber, however, it is expected that this be the case, as the material of the layer is equivalent to that of the present application and its effect is therefore expected to be the same.

Regarding claim 14, the thickness of the barrier layer is not explicitly taught, however, it is expected that the layer be below about 100 microns, because of catalyst size restraints.

Claim 7 and 14 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hanaki et al. (US 6,514,905) as applied above.

Hanaki et al. does not specifically teach that the first layer, or "alkali barrier layer", is sufficient to substantially inhibit the migration of alkali material out of the adsorber, however, it is expected that this be the case, as the material of the layer is equivalent to that of the present application and its effect is therefore expected to be the same.

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Regarding claim 14, the thickness of the barrier layer is not explicitly taught, however, it is expected that the layer be below about 100 microns, because of the dimensions of figure 1 and also because of catalyst size restraints.

Claims 13-14 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over JP 09-057099 as applied above.

JP '099 does not explicitly teach that the alkali metal barrier layer comprises an atomic film or a film having a thickness up to 100 micron. It is expected that the barrier layer formed as in example 1 comprises an atomic film, due to the method of its formation. It is furthermore expected that this film have a thickness of less than 100 microns.

Claim Rejections - 35 USC § 103

Claims 8-11 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al. (US 6,221,804) as applied above.

Regarding claims 8-11, Yamada et al. does not explicitly teach the amount of additional "alkali metal barrier" loaded on the porous support. However, a variety of materials and ratios of those materials are taught and one of the combinations of materials and ratios is expected to result in the claimed amount of "alkali metal barrier" in the porous support. Thus, it would have been obvious to one of ordinary skill at the time of invention to select a combination of materials and ratios of these materials which results in an amount of "barrier material" within the claimed range.

Regarding claim 14, the thickness of the barrier layer is not explicitly taught, however, it would have been obvious to one of ordinary skill at the time of invention to form the layer with a thickness below about 100 microns, because of catalyst size restraints.

Claims 8-11 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hanaki et al. (US 6,514,905) as applied above.

Regarding claims 8-11, Hanaki et al. does not explicitly teach the amount of additional “alkali metal barrier” loaded on the porous support. However, a variety of materials and ratios of those materials are taught and one of the combinations of materials and ratios is expected to result in the claimed amount of “alkali metal barrier” in the porous support. Thus, it would have been obvious to one of ordinary skill at the time of invention to select a combination of materials and ratios of these materials which results in an amount of “barrier material” within the claimed range.

Regarding claim 14, the thickness of the barrier layer is not explicitly taught, however, it would have been obvious to one of ordinary skill at the time of invention to form the layer with a thickness below about 100 microns, because of catalyst size restraints.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al. as applied to claim 1 above, and further in view of EP 778072 A2.

Yamada et al. does not teach utilizing a three-way catalyst downstream of the absorber or as part of the absorber. However, EP ‘072 teaches a three way catalyst positioned downstream of a NO_x absorber. At the time the invention was made, it would have been obvious to one of

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ordinary skill in the art to include a three way catalyst downstream the catalyst of Yamada et al. because EP '072 teaches a three way catalyst would oxidize any unreacted HC and CO which pass through the NO_x trap and catalytic component and provide for NO_x conversion during periods of stoichiometric engine operation and during purging of the NO_x trap.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hanaki et al. as applied to claim 1 above, and further in view of EP 778072 A2.

Yamada et al. does not teach utilizing a three-way catalyst downstream of the absorber or as part of the absorber. However, EP '072 teaches a three way catalyst positioned downstream of a NO_x absorber. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to include a three way catalyst downstream the catalyst of Hanaki et al. because EP '072 teaches a three way catalyst would oxidize any unreacted HC and CO which pass through the NO_x trap and catalytic component and provide for NO_x conversion during periods of stoichiometric engine operation and during purging of the NO_x trap.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: US 6,444,610.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter J Lish whose telephone number is 571-272-1354. The examiner can normally be reached on 9:00-6:00 Monday through Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

PL



STUART L. HENDRICKSON
PRIMARY EXAMINER